Indexing EHR content and knowledge sources with SNOMED CT for localization of Epic

SNOMED CT Expo 2017

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DK regions are contracting with Epic in 2013
Half of Denmark population covered by Epic EHR - 19 hospitals, two regions
• One patient - One record
• Coherent data
• Harmonization across hospitals and across regions
• Secure portal for patients and their families
• Patient empowerment
• Customer implementation – Epic methodology

Overall goals by implementing Epic in DK
”Harmonization across hospitals and across regions”
Meaning

- that clinical diagnostic procedures performed by different hospitals within the same specialty get comparable results &
- that patients within the same specialty receive the same examination and treatment options regardless of the service provider localization
Some important steps to do

• Get an overview of what are the clinical practices of the two regions

• Create a model of…
  • Collecting all formalized clinical instructions from 19 hospitals, and distibute to groups of specialists (Subject Matter Experts) to harmonize
Coming from...

Region A
Departments/hospital

Clinical instructions – One content management system

Region B
Departments/hospital

Clinical instructions – Another content management system

No sharing of clinical information

Lot of redundancy – Local variants

VIP

D4
Going to ...

Region A
Departments/hospital

Clinical instructions – One content management system

Harmonization of instructions

Region B
Departments/hospital

Clinical instructions - Another content management system

Sharing clinical information

VIP

D4
52,000 partly redundant instructions / references for treatments in the two regions were collected in one single spreadsheet

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<th>B</th>
<th>C</th>
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Next challenge – Sort & Build specialty collections
A method to do this…

• Index content with terminology

• DIAGNOSIS
• PROCEDURE
• CLINICAL PROCESS
• SPECIALTY
SNOMED CT – An obvious reference terminology for classification

• A prerequisite

That a translation of the Fully Specified Names in SNOMED CT is accessible, to make sure of semantic correct classification

*(translation done by the Danish National Board of Health 2004-2008)*
An example of a regional clinical instruction

Danish: 
Psykomotorisk retardering, undersøgelse, behandling og opfølgning af børn

English: 
Impaired psychomotor development, Assessment, Treatment and Follow-up of Children
Content is tagged with SNOMED CT concepts - here components in the title

Impaired psychomotor development (finding)

Assessment, Treatment and Follow-up of Children

Childhood age person (person)

Entire psyche (body structure)

Monitoring - action (qualifier value)

Examination - action (qualifier value)

Therapeutic procedure (procedure)

Therapeutic intent (qualifier value)

Diagnostic procedure (procedure)

Management - action (qualifier value)

Monitoring of patient (regime/therapy)
Impaired psychomotor development assessment, treatment and follow-up of children.

- Impaired psychomotor development (finding)
- Child (person)
- Diagnostic procedure (procedure)
- Management - action (qualifier value)
- Monitoring of patient (regime/therapy)
- Therapeutic procedure (procedure)
- Therapeutic intent (qualifier value)
- Examination - action (qualifier value)
- Monitoring - action (qualifier value)
- Entire psyche (body structure)
- Childhood age person (person)

Content is tagged with SNOMED CT concepts - here components in the title.
Impaired psychomotor development (finding)
Assessment, Treatment and Follow-up of Children

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Therapeutic procedure (procedure)
Therapeutic intent (qualifier value)

Diagnostic procedure (procedure)
Management - action (qualifier value)
Monitoring of patient (regime/therapy)
Impaired psychomotor development (finding)

Childhood age person (person)

Entire psyche (body structure)

Process

Monitoring - action (qualifier value)

Examination - action (qualifier value)

Therapeutic procedure (procedure)

Therapeutic intent (qualifier value)

Child (person)

Diagnostic procedure (procedure)

Management - action (qualifier value)

Monitoring of patient (regime/therapy)

Process
Impaired psychomotor development (finding)
Assessment, Treatment and Follow-up of Children

- Impaired psychomotor development (finding)
- Specialty
- Child (person)
- Diagnostic procedure (procedure)
- Management - action (qualifier value)
- Monitoring of patient (regime/therapy)
- Therapeutic procedure (procedure)
- Therapeutic intent (qualifier value)
- Examination - action (qualifier value)
- Monitoring - action (qualifier value)
- Entire psyche (body structure)
- Childhood age person (person)

Content is tagged with SNOMED CT concepts - here components in the title
• By tagging a large and inconceivable number of source material with SNOMED CT concepts, you can classify the sources ie obtain collections of sources

• Each collection of clinical instructions can be distributed to the Subject Matter Experts (SMEs) for priority and harmonization (avoiding spending time looking for a needle in the haystack)
• Content of diagnosis and procedures in the Epic Foundation System are mapped to SNOMED CT concepts

• Epic uses SNOMED CT concepts for diagnosis groupers for e.g. decision support, track and report on patients’ medical history, track interventions and outcomes for certain diagnoses

• Like the tagging process of clinical instructions, Epic Foundation content can be classified

• Clinical instructions which are qualified by the SMEs can be linked to a variety of places in Epic e.g. to Orders / Order-sets

How does the SNOMED CT tagging process of clinical guidelines come into play with Epic?
Classifying content of the Epic Foundation system with SNOMED CT

- Identification of/tag content elements in the Epic Foundation System to SNOMED CT concepts (like for clinical instructions)

- Use tags for adjusting content between clinical practice and content of the Epic Foundation system e.g.
  - Workflow navigation in the system
  - Decision support
    - E.g. links to clinical instructions
  - Document support
    - E.g. Links to clinical instructions
Mapping
Clinical instructions – Epic Foundation System via SNOMED CT concept

Cross regional Clinical Instructions

Septisk shock, svær sepsis målrettet behandlingsstrategi for patienter på intensiv afdeling
Sepsis og svær sepsis og septisk shock
Sepsis – initiel observation, diagnostik og behandling af onkologiske patienter
Sepsis hos børn mellem 4 uger og 18 år

SNOMED CT concept
Sepsis (disorder) [91302008]

Epic Foundation System

ED ADULT SEPSIS EVALUATION [1600000050]
GEN ADULT SEPSIS ADMISSION [3040000389]
GEN ADULT SEPSIS FOCUSED [3040000423]
GEN ADULT SEPSIS MANAGEMENT [3040000427]
NEO NEONATAL SEPSIS FOCUSED [3040000507]
Clinical Instructions

Danish EHR
"Sundheds-platformen"

EPIC – Content of the Foundation System

SNOMED CT

Thank you for your attention 😊